

Appendices A-D Not Included. Please visit the Learning Resource Center on the Web at <http://www.lrc.fema.gov> to learn how to obtain this report in its entirety through Interlibrary Loan.

ABSTRACT

The median age of the population of the United States is the highest it has ever been. People are living longer and the oldest segment of Philadelphia's population (85+) is growing quickly. The baby boomer generation, the largest generation in our nation's history, is approaching retirement. Older adults are a high-risk group for fire injury and death. The purpose of this action research paper is to estimate the effect that baby boomers, as older adults, will have on the annual number of fire deaths and injuries. Specifically we ask the following questions:

- 1) What has been the effect of baby boomers on American Society?
- 2) Should we expect an increase in the annual number of fire deaths in Philadelphia as a result of the baby boomers entering older adulthood?
- 3) What, if anything, should the Philadelphia Fire Department do to prepare for the baby boomer generation reaching older adulthood?

I reviewed the literature on the baby boomer generation, fire safety for older adults and successful fire safety/prevention programs. Baby boomers have influenced our society, and will continue to influence our society. This group will age and suffer the attending

infirmities of aging as did their parents and grandparents. The aging process will make them less capable of a rapid and appropriate response to a home fire, and as a result, fire deaths are likely to increase unless we act. Public education is an effective method of reducing fire deaths.

With this in mind, I designed a fire safety/prevention program for older adults in Philadelphia and enlisted the assistance of the media and the private sector. I recommend that fire departments throughout the United States be alert to demographic changes in their own communities and design their fire prevention programs accordingly.

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INTRODUCTION

National studies and Philadelphia data indicate that the risk of burn injury and fire deaths increases with age. Older adults are a growing segment of the United States population. The last census revealed that the 85+ segment of Philadelphia's population is one of the fastest growing demographic groups in the City. This may be the beginning of a demographic shift not only in Philadelphia, but also throughout the nation. The first wave of baby boomers, that group of people born between 1946 and 1964 and the largest demographic group in the history of the United States, are now 54 years old and approaching retirement. As a result the population of Philadelphia and the nations is getting older.

Older adults are a high-risk group of fire death. The purpose of this action research paper is to evaluate the effect that aging baby boomers will have on the annual number of fire deaths in Philadelphia. My concern is that when this large demographic group (baby boomers) reaches the final stage of their life and enters this high-risk age category, we will see an increase in fire deaths in Philadelphia.

Specifically this research paper asks:

- 1) What has been the effect of baby boomers on

American Society?

- 2) Should we expect an increase in the annual number of fire deaths in Philadelphia as a result of the baby boomers entering older adulthood?
- 3) What, if anything, should the Philadelphia Fire Department do to prepare for the baby boomer generation reaching older adulthood?

BACKGROUND AND SIGNIFICANCE

The mission of the Philadelphia Fire Department (PFD) is the protection of life and property for the citizens of Philadelphia. The PFD accomplishes their mission in several ways. First, with well-trained firefighters and paramedics who respond promptly to fire and medical emergencies. In addition, the PFD provides a year-round and very comprehensive fire and burn prevention program that involves public education, fire safety inspections and smoke alarm installations.

Firefighters throughout the City conduct fire safety inspections in commercial, business and institutional occupancies, as well as in multiple occupancy dwellings. Firefighters will also inspect single family dwellings upon request or supply homeowners with a do-it-yourself home inspection form. Last year, fire companies conducted 20,000 fire code inspections and performed 12,000 fire

prevention/safety programs. In addition, the Fire Prevention Division conducted 3,474 public education programs in fire prevention and fire safety (Philadelphia Fire Department, 2001).

One measurement of the PFD's effectiveness is the number of fire deaths that occur each year - the fewer the better. Over the last 25 years there has been a dramatic reduction in fire deaths in Philadelphia. In 1978, there were 119 fire deaths. In the year 2000, 51 people died in fires. The 42 fire deaths in 1999 were the fewest number of deaths since 1945 (McGee, 2000). Children and older adults are typically the two groups that are most at risk of fire death. In 1995 there were 90 fire deaths in Philadelphia. Children six and under accounted for 23 three deaths (26%) and there were 29 adults 55 years and older (32%) that died in fires in 1995.

Last year people 55 years and older accounted for 60% of all the fire deaths that occurred in Philadelphia. Children six and under accounted for 6% of the 51 fire deaths in Philadelphia (Garritty, 2001 and Ruff, 2001. To date this year, people 55+ comprise 66% of the 32 fire deaths that have occurred during the first nine months of the year (Potemski, 2001). While fire deaths for children

six and under are declining, fire deaths for people 55+ in Philadelphia appear to be increasing.

National reports on fire death and injury conclude that older adults are at risk for home accidents, and there is a direct increase in risk of being a fire casualty with age (Hall, 1999). The Philadelphia Inquirer reports that the 85+ segment of Philadelphia's population is one of the fastest growing groups (Census estimates: elderly are the fastest growing groups, 2000) and Pennsylvania has the second highest percentage of resident population adults age 65 and over (U.S. Census Bureau, 1999). In addition, the largest demographic group in the history of the U.S., the baby boomers, is approaching retirement.

Our population is aging and the PFD must evaluate the impact of this demographic shift, in light of the existing approach to fire prevention and the potential negative effect on fire casualties. A basic principle of workforce development, as discussed in Chapter 6 of Executive Leadership, is that "a fully aligned and well trained workforce is critical for a high performing organization". In order to fully align the PFD workforce toward the goal of reducing fire deaths, we need to fully evaluate the challenge that aging baby boomers pose to the fire safety

and prevention programs in Philadelphia, now and in years to come.

LITERATURE REVIEW

The nation's population is aging, due in the most part to the aging baby boomers. As a result of the graying of this huge demographic group, the median age of the United States population has reached the highest point ever. (Belsie, 2000). Baby boomers are the largest generation ever recorded and in the year 2000 this group celebrated birthdays ranging from 36-54 (Associated Press Online, 2001a). Newsweek magazine (2000) reports that six years ago the average net worth of baby boomer's households was \$90,500. But not all baby boomers are white and affluent. Many are poor and struggling financially and millions are African American, Hispanic, Asian and Native American (Associated Press Online, 2001b)

Baby boomers have had an impact on American society. Boomers have been blamed for social problems such as drugs, the deficit and poor schools. They have been credited with sitcoms, MTV and Twinkies (Zeman, 1999). According to Tom Monroy (2000) baby boomers have redefined every stage of life that they have experienced and have had direct economic impact as a result. In fact the economic impact of baby boomers has given rise to a new term - EBREs

(pronounced e-breeze), a acronym for Early Boomers Redefining the Economy.

What might we expect when baby boomers enter older adulthood? An analysis of hospital utilization by age group may provide a preview. When Tenet Healthcare Corporation analyzed hospital service by age group, service for the 51-60 year old age group had increased the fastest. The second highest volume growth by age group was for the 45-50 year old group. (Kirchheimer, 20001). Tenet predicts that baby boomers will be using the hospital in greater numbers in the years ahead.

One-in-nine baby boomers is expected to live at least 90 years and the age group 85+ is expected to triple in number by 2020(USA Today Magazine, 2000). Other hospital groups are already preparing for the aging baby boomer. Universal Health Services, located just outside of Philadelphia, is already dedicating their largest capital allocations toward services such as oncology, cardiology and gynecology to prepare for the aging boomers (Kirchheimer, 2001).

The baby boomer's retirement is expected to adversely affect Social Security. By 2030, when most baby boomers have left the workforce, there may be as many as 70 retirees for every 100 workers. "By 2030, 20.2% of

Americans will be 65 and older compared to 12.6% in 2000, and the ratio of younger people to those 65 and older will have declined from today's 4:1 to 2:3. (Thomas, 1999).

If you speak to older adults many will tell you that the term Golden Years is a misnomer. Older adulthood for many people means illness, prescription drugs and diminished physical and mental capacity. According to a report in the Congressional Budget Officer, cited in Thomas (1999), if the current rate of disability among the elderly continues, almost 8 million severely disabled elderly people will be living in the year 2030, with a similar number suffering from lesser infirmities.

The retirement of baby boomers may also adversely affect the world's workforce. With the baby boomer's retirement there may be insufficient well-trained people available. The 2000 census found that the 25-34 age group has actually declined in number as baby boomers aged (Edmunds, 2001). One author suggests that the retirement of the baby boomers will leave the workforce with fewer skilled and experienced secretaries. The result will change the traditional attorney/secretary ratio of 2:1 or 3:1. In the future, this ratio is likely to be 6:1 or 8:1 (Egger, 1997).

Teacher shortages are nothing new. A 1989 paper presented at an Arkansas education symposium reported teacher shortages in 37 states, with acute problems in rural areas (Bell & Steinmiller, 1989). Ten years later, there was a prediction of a shortage of business teachers due to projected retirements (Okula, 1999). The problem of finding qualified teachers also challenges urban areas as well. Just this year, Philadelphia's City Council waived the residency requirement for new teachers, while maintaining the requirement for other uniformed and non-uniformed City employees. There is a shortage of geriatric physicians nationwide. As baby boomers age, healthcare providers are concerned that there will not be a sufficient number of geriatric specialists to adequately treat an aging U.S. population (Crawford, 2000).

What should the PFD do to prepare for this huge demographic shift? Older adults constitute a large percentage of the annual number of fire deaths, in Philadelphia and across the nation. Last year in Philadelphia, people over the age of 50 were 65% of all fire deaths (Garritty, 2001). Between 1990 and 1994 the average age of fire victims in St. Louis was 70 years (Sanders, 1994).

In the TriData publication, *Fire Risks for Older Adults* (1999), the author reports that unintentional injuries kill 30,000 elderly each year and fires cause approximately 1200 older-adult deaths. Compared to the rest of the population the risk of dying in a fire increases by 20% once you reach the age of 60. For those people 75 and older the risk is twofold. For people 85 and older the risk is four times the national average.

This increased risk may be due to conditions associated with aging. The Tridata report (1999) points to disabilities such as loss of hearing, limited mobility and chronic illness requiring prescription drugs as conditions that may predispose an individual to having an accident. Just as importantly, these same conditions may limit an individual's ability to respond appropriately to an emergency such as a house fire.

These findings are similar to those of another study. Cadier & Shakespear (1995) found that older people are at a risk of burn injury due to decreased mobility, slower reaction time, impaired judgement and pre-existing illnesses. Cadier & Shakespear cited other research (Turner, Lehman & Jordan, 1898) that found 83% of elderly females, burned in cooking-related incidents, had significant pre-burn illness. In still another study cited

in Cadier & Shakespear, the authors (Hammond & Ward, 1991) found that pre-burn illness existed in 93% of the burn cases studied.

Engineering a solution for fire deaths is limited due to the fact that most occur in the home. Domestic sprinkler systems would quickly control most home fires but not necessarily prevent a burn. Another engineering remedy is smoke alarms. Smoke alarms do not prevent fires but they provide quick detection and alarm. In a 1997 study (Furjuoh, Coben, Dearwater and Weis) the researchers found that 8% of Pennsylvania's homes lacked smoke alarms and 14% of the homes lacked smoke alarms on the same level where the inhabitant slept. Low-income homes were significantly more likely to lack smoke alarms than were more affluent homes.

In another study (McKnight, Struttman & Mays, 1995) the authors concluded that four population-based characteristics are associated with the lack of a functioning smoke alarm in the home: living in a non-apartment dwelling, having an annual household income of \$20,000.00 or less, being unmarried and living in a non-metropolitan county. Many older adults live alone at home on a fixed income and lack the financial resources of their younger counterparts. The elderly are particularly at risk

of having an accident in the home (Stone, Ahmed & Evans, 1999). In terms of fire safety, the home can be quite dangerous. Nationally, residential fires account for 73.4% of all structure fires, 93% of civilian fire deaths and 84.5% of civilian fire injuries (Ahrens, 1999).

Efforts to prevent fires and reduce fire casualties have been successful, both nationally and locally. According to the Committee on Injury and Poison Prevention (2000), public fire and burn prevention programs, along with smoke alarms and home sprinkler systems, are directly responsible for the reduction in fire deaths and acute hospital admissions for injuries from burns. Victor, Pringle, Munster & Horn (1988) believe that 75% of all burns can be prevented. Specifically, they believe that fire safety education should stress safe smoking and kitchen safety for older adults. Their study concluded an older adult's knowledge of burn prevention improves after attending a burn prevention program.

The United States Fire Administrations (USFA) states that we should assess an older adult's risk of fire death or injury in terms of their resistance to leave their home, their mobility, their need of assistance and their waking response (TriData, 1999). In this same report the USFA concludes a few simple steps can reduce the chance of fire

injury and death for older adults and directs us to further action:

"While self empowerment is an important component, the general public must also engage in activities that reduce the risk that fire poses to the elderly. Caregivers, family members and friends of the elderly must contribute actively to maintaining fire safety measures for their aging parents, patients and friends. As the nation's elderly population grows, the fire safety community must address the needs of older adults or be faced with the potential for a massive public health problem."

My review of the literature clearly indicates that older adults are an at-risk group for fire deaths and injury and the size of this group is growing. My research clearly directs me to address this problem and do more to protect older adults.

PROCEDURES

The desired result of this paper is: 1) to understand the impact that the baby boomers have had on society; 2) estimate the effect that this large demographic group is likely to have on the annual number fire deaths in Philadelphia in the future; and 3) decide on a course of action (if necessary) to reduce the negative effect of aging baby boomers on the PFD's efforts to reduce fire deaths in Philadelphia.

To answer research questions one and two, I reviewed the literature on the impact of baby boomers on American

society and surveyed the literature on how the experts expect the baby boomers will influence American Society during their retirement. Finally, to answer the last question I examined articles and texts written about fire prevention programs for older adults, as well as successful programs for other age groups. I also searched the literature for information about the fire risks for older adults and successful programs that other fire departments have used to reduce these risks.

One limitation of this study is the fact that there are few scientific reports of successful public education programs to reduce fire deaths. Most fire departments have a difficult time supporting public education efforts let alone scientific studies to determine the success or failure of these programs. However, post fire safety educators tell me that public education does work by changing attitudes and behavior.

RESULTS

The baby boomer generation has had an impact on the way Americans live (Edwards, 2001). They have had an effect on our music, fashion and financial system (Zeman, 1993 & Sloan, 1998). According to one author (Belsie, 2001), the baby boomers have had more effect on our image of aging than any other generation in our nation's history. Yet in

many ways they are no different than any other generation in that baby boomers have and will go through the same developmental stages as their parents and grandparents. However, by virtue of the size of this group, baby boomers have had a greater impact on our society than did previous generations.

The experts have made predictions about the impact of the baby boomer's retirement on our nation. The graying baby boomers will negatively impact Social Security, Medicare and the available skilled workforce (Vladeck & Sofaer, 2000; Thomas, 1999; Egger, 1997). The United States population's median age is at the highest point ever. With baby boomers living longer, it is expected that the 85+ age group will triple by 2020 (Belsie, 2001).

What we may be seeing is several demographic factors converging. Today's older adults benefit from medical science and live longer. In Philadelphia, people in the 85+ age group are the second fastest-growing age group. This segment of Philadelphia's population has increased by 15% since the 1990 census. The first wave of 76 million baby boomers in the United States is approaching age 60. Within 30 years 70 million Americans, one-fifth of the population, will be 65 years of age or older (Mikulski, 2001).

Older adults are a high-risk group for fire death and burn injury. It is the common, everyday activities (in both rural and urban areas) in which people are typically burned (Vidal-Trecan, et al., 2000). In a study conducted in West Midland, England, 80% of all fire fatalities during a 12-month period were of pensionable age. Furthermore, the researchers concluded that the risk of a household fire is underestimated for older adults (Meldrum, 1997).

Baby boomers are likely to suffer the same physiological and psychological effects of aging that have caused previous generations of older adults to incur an increased risk of being a fire casualty. However, the baby boomer generation is different than previous generations in that this demographic group is far larger than previous generations. As they enter older adulthood, with the associated increased fire casualty risk, we are likely to see an increase in fire deaths in Philadelphia and across the United States - unless we intervene.

Burn prevention and fire prevention programs can and do work. Injuries can be understood and controlled by modifying behavior and the environment (Walker, 1998). The American Academy of Pediatrics (2000) attributes, in part, public fire and burn prevention programs with the 20-year decline in fire and burn-related deaths and acute hospital

admissions. Burn education programs designed to prevent burn injuries are successful for older adults (Victor, Lawrence, Munster & Horn, 1998); however, it is important that the message be age appropriate (United States Fire Administration, 1993).

Last year in Philadelphia, there was a marked increase in the number of fire deaths for people 55 and over. This may be a statistical anomaly, or it may be the start of a trend driven by an aging population. We know that society is graying and Philadelphia has a growing population of older adults. In order to address this demographic reality, the PFD should initiate a fire safety program designed specifically toward reducing fire deaths and burn injuries among older adults.

The program will focus on fire safety and fire prevention awareness for older adults, their family and caregivers. Specifically, the program will address cooking, smoking, candles, portable heaters, smoke alarms and home escape planning. The program will utilize both print and electronic media to reach the intended audience, and I will join with corporate partners to help fund this program.

I have requested our Visual Communications Unit produce a fire safety pamphlet for older adults (Appendix A). The pamphlet is designed with large print and depicts

healthy and active older adults. I have solicited the assistance of St. Agnes Burn Center to produce a color version of this pamphlet. We will distribute this pamphlet at health fairs and other safety and fire prevention programs.

The PFD has had a long-standing partnership with GlaxoSmithKline Corporation (GSK) to produce fire safety posters. This year GSK will produce 5,000-color posters (Appendix B) and 100,000 book marks (Appendix C) in both English and Spanish, all with the theme: Protect Older Adults. Firefighters will distribute these posters to commercial and public buildings throughout the city. Members of the Fire Prevention Division will distribute the bookmarks to Public Libraries throughout the city. The posters and bookmarks are designed to remind the public of the fire risk facing older adults and hopefully inspire them to take appropriate measure to reduce the risk.

I have also requested the Fire Prevention Division to prepare a program for company officers to assist them deliver the fire safety message to older adults. This spiral bound booklet provides the company officer with a packaged presentation on fire safety that the company can use when speaking to groups of older adults. The booklet provides the company officer with information on seven

fire-safety topics. The company officer, or firefighter, can discuss all or a few of the topics depending on time constraints.

During Fire Prevention Week 2001 the Fire Prevention Division, working in conjunction with the Pen/Jer/Del Chapter of the National Fire Sprinkler Association Inc. and the Philadelphia Inquirer newspaper, designed five different quarter-page fire-safety advertisement for publication. On Friday October 12th the message was Fire Safety for Older Adults. This paper reached hundreds of thousands of homes in Philadelphia and the surrounding counties.

We are planning a series of public safety announcements for the local ABC TV affiliate. Channel 6 will film these fire safety messages and broadcast them during their newscast through the month of January. Fox 29, another local station, has already broadcast a report on older adult fire fatalities in Philadelphia and featured our company officers booklet on fire safety for older adults.

DISCUSSION

In Philadelphia older adults and children have been the two most at-risk groups for fire death. But over the last several years there has been a decrease in the number

of fire deaths in the youngest age group and an increase in fire deaths for the oldest group. In 1995 children six or under accounted for 26% of all Philadelphia fire deaths and adults 55 and over comprised 32% of fire deaths. Last year children 6 years and under were 6% of the Philadelphia's fire deaths and the 55+ age group accounted for 55%.

The recent reduction in fire deaths for children 6 and under may be due to two smoke alarm programs: Operation Save A Child and Operation Children First. Under Operation Save A Child, local hospitals provide a smoke alarm to families taking their newborns home from the hospital. On the child's first birthday the parents receive a new battery for the smoke alarm. Operation Children First is a program to target homes with children under 12 living in census tracts with a history of fire deaths. Firefighters install lithium-battery smoke alarms in these homes.

There is no scientific way for us to determine if in fact these programs are reducing fire deaths in the youngest age group; however, we have seen a decrease. These data are consistent with the literature that concludes fire prevention programs can save lives.

We've also seen an increase in fire deaths in older adults. This may be due to Americans living longer (Crimmins, 2001) and the large number of older adults who

reside in Pennsylvania. Pennsylvanians are the second most likely group, when the groups are state residents, to grow old where they were born (Ginsberg, 2001). With an aging and stationary population, and the risk of fire death and injury increasing with age (Fire Risk For Older Adults, 1997), it appears that without intervention we will see an increase in fire deaths, nationally and locally unless we take appropriate measures. Last year civilian fire deaths in the United States increased by 13.3% compared to 1999 (Karter, 2001). Last year in Philadelphia, fire deaths increased by 21% compared to the previous year (Philadelphia Fire Department, 2001).

As cited in Harper & Dickenson (1995), Walker (1990) found an exponential increase in mortality for 75+ year old burn victims. The reason for this increased mortality risk is the victim's physical condition. When an older adult is burned conditions such as decreased physical reserves, decreased immune response and the body's inability to respond to resuscitation adversely affect survivability. If the victim survives the incident, conditions such as poor circulation and delayed wound healing make recovery difficult.

Fire prevention programs can and do work for older adults. In a study of 111 octogenarians between 1983-1993,

Codier & Shakespear (1995) concluded that burn injuries were declining due to better safety awareness. Effective public education programs to reduce the fire risk for older adults can be simple and straightforward in their design. According to the United States Fire Administration (1999) older adults can reduce their risk of fire and subsequent injury or death by practicing a few simple fire safety tips. According the the National Fire Protection Agency (2001) cooking fires are the number one cause of home fires and home fire injuries. During December, January and February heating is the leading cause of home fires with most heating fires caused by space heaters. Smoking is another common cause of fire. By stressing safe smoking, kitchen safety and heater safety for older adults, many if not most home burn injuries can be prevented. Public education programs can significantly improve an older adult's understanding of fire safety (Victor, Lawrence, Munster & Horn, 1988).

In my opinion a public education to heighten awareness to the increased fire-death risks facing older adults is consistent with the mission of the PFD, and strongly supported by the literature.

RECOMMENDATIONS

Older adults are living longer and the baby boomers are approaching retirement. Baby boomers have had an impact on American society at every stage of development so it is likely that they will also have an impact on American Society in their retirement. Baby boomers will grow old, suffer the infirmities of older adulthood and incur the increasing risk of fire death and burn injury. The fire service must take notice of a startling demographic reality, "America has 76 million aging baby boomers and in 30 years, 70 million Americans will be 65 years and older, representing one-fifth of the United States population" (Mikulski, 2001).

In television commercials and print advertisements we often see older adults portrayed as vibrant and active into their 80's. The reality is that older adults often develop complex health problems. These medical problems do not always develop late in older adulthood. In sixteen oxygen therapy fires that occurred in Philadelphia between 1994-2000, six victims were between 49 and 59 years of age (Garritty, 2000).

The impact of the baby boomers may occur sooner than expected. The increase in fire deaths last year, despite a decline in fires, may be an indication of the effect of a

aging population on fire death statistics. Fire Departments should evaluate their fire prevention programs in light of the population they serve and consider the impact of the aging baby boomer on the fire risk within their community. Public education can improve fire safety for older adults and decrease the risk of fire death or injury. It may be as simple as drawing public attention to the risk older adults face and providing them with information about how to reduce these risks.

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